

Application Serial No. 09/878,744
Amendment dated October 6, 2003
Reply to Office Action of April 4, 2003

Listing of Claims

1. (Previously Presented) A snowplow and mount assembly
comprising:

a mount frame adapted to be secured to a vehicle;

a snowplow frame;

one of said mount frame and said snowplow frame having first and second arms and the other of said mount frame and said snowplow frame having first and second receivers, said first and second receivers receiving said first and second arms, respectively;

first and second latch pins movable to and between latched and unlatched positions, respective ones of which removably secure said first and second arms in said first and second receivers, said first and second latch pins normally biased toward said latched position; and

a latch lever operably associated with said first and second latch pins for simultaneously freeing said latch pins to move to said latched position and moving said latch pins to said unlatched position.

2. (Previously Presented) A snowplow and mount assembly
comprising:

a mount frame adapted to be secured to a vehicle;

a snowplow frame;

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one of said mount frame and said snowplow frame having first and second arms and the other of said mount frame and said snowplow frame having first and second receivers, said first and second receivers receiving said first and second arms, respectively;

first and second latch pins, respective ones of which removably secure said first and second arms in said first and second receivers; and

a latch lever operably associated with said first and second latch pins for simultaneously actuating said latch pins to latched and unlatched positions;

further comprising:

a spring biasing each said latch pin into said latched position; and

a pin extractor associated with each said latch pin and actuatable by said latch lever to extract said latch pin from said arm and against the bias of said spring.

3. (Original) The assembly of claim 2 wherein said extractor includes a cam which operably cams against said latch pin during extraction thereof.

4. (Original) The assembly of claim 3 wherein each said latch pin and respective extractor are mounted in brackets mounted to said snowplow frame, said brackets guiding movement of said latch pin and extractor.

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5. (Original) The assembly of claim 4 wherein said latch pins travel transversely relative to a longitudinal axis of said assembly and said extractors travel perpendicularly relative to the travel of said pins.

6. (Original) The assembly of claim 5 wherein each said latch pin includes a cross pin therethrough, and wherein said cross pin compresses said spring against a wall of said bracket as said cam cams against said cross pin.

7. (Original) The assembly of claim 6 wherein said cam has a cam surface which is a ramp.

8. (Original) The assembly of claim 7 wherein said latch lever is pivotally connected to said snowplow frame, said assembly further including first and second linkages connected between said latch lever and said extractors.

9. (Original) The assembly of claim 8 wherein each of said first and second linkages includes a linkage arm connected to said latch lever, and a linkage rod pivotally connected on a first end to said linkage arm and connected on a second end to said extractor.

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10. (Original) The assembly of claim 9 wherein said latch lever includes a connecting rod extending transversely of said snowplow frame, said first and second linkages being connected to said connecting rod.

11. (Original) The assembly of claim 1 wherein said first and second arms are part of said mount frame and said first and second receivers are part of said snowplow frame.

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12. (Original) The assembly of claim 1 wherein said snowplow frame comprises a lift frame and an A-frame pivotally connected to said lift frame on a rearward end of said A-frame.

13. (Original) The assembly of claim 12 further comprising a plow blade mounted on a forward end of said A-frame.

14. (Original) A snowplow and mount assembly comprising:
a mount frame adapted to be secured to a vehicle;
a snowplow frame including a jack stand moveable to and between an extended ground contacting and snowplow frame supporting position and a retracted ground noncontacting and snowplow frame nonsupporting position;

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a latch mechanism which removably secures said snowplow frame to said mount frame; and

a latch lever which actuates said latch mechanism to latched and unlatched positions, said latch lever operably freeing said jack stand for movement into the extended position when said latch mechanism is in the unlatched position and operably preventing jack stand movement maintaining said jack stand in the retracted position when said latch mechanism is in the latched position.

15. (Original) The assembly of claim 14 further comprising first and second jack stand locks, said first lock preventing relative movement of said jack stand relative to said snowplow frame when said jack stand is in the extended position and said second lock preventing relative movement of said jack stand relative to said snowplow frame when said jack stand is in the retracted position.

16. (Original) The assembly of claim 15 wherein said first jack stand lock comprises:

a jack stand lock lever having an aperture therein through which a leg of said jack stand passes; and

a spring biasing an edge of said lock lever aperture into contact with said jack stand leg;

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said spring and lock lever normally preventing upward movement of said jack stand relative to said snowplow frame while permitting downward movement of said jack stand relative to said snowplow frame, whereas pivoting said lock lever against the bias of said spring frees said jack stand leg from said lock lever aperture edge thereby permitting upward movement of said jack stand relative to said snowplow frame.

17. (Original) The assembly of claim 15 wherein said second jack stand lock comprises:

a jack stand lock pin movable into and out of an aperture in a leg of said jack stand; and

a spring biasing said lock pin toward said jack stand leg;

said spring and lock pin normally preventing downward movement of said jack stand relative to said snowplow frame, whereas urging said lock pin against the bias of said spring frees said jack stand leg from said pin permitting downward movement of said jack stand relative to said snowplow frame.

18. (Original) The assembly of claim 17 wherein said jack stand drops by gravity to the extended position when said jack stand leg is freed from said pin.

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P) 19. (Original) The assembly of claim 17 wherein said latch lever includes a cam operably connected thereto and said jack stand lock pin is fixed to a cam follower which cooperates with said cam such that pivoting said latch lever to actuate said latch mechanism to the unlatched position urges said cam follower and hence said jack stand lock pin against the bias of said spring and away from said jack leg and out of said aperture thereof, whereas pivoting said latch lever to actuate said latch mechanism to the latched position permits said spring to bias said jack stand lock pin toward said jack stand leg and into said aperture thereof.

20. (Original) The assembly of claim 19 wherein said latch lever includes a connecting rod extending transversely of said snowplow frame, said cam is a cylinder encircling said connecting rod and fixed thereto and said cam follower is a cylinder encircling said connecting rod and slidable relative thereto.

21. (Original) The assembly of claim 20 wherein said cam cylinder and cam follower cylinder have mating arcuate cam surfaces.

22. (Original) The assembly of claim 14 wherein one of said mount frame and said snowplow frame has first and second arms and the other of said mount frame and said snowplow frame has first and second receivers, said first and second receivers receiving said first and second arms, respectively, and wherein said

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latch mechanism comprises first and second latch pins, respective ones of which removably secure said first and second arms in said first and second receivers, said latch lever operably associated with said first and second latch pins for simultaneously actuating said latch pins to latched and unlatched positions.

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23. (Original) The assembly of claim 22 further comprising:

a spring biasing each said latch pin into said latched position; and

a pin extractor associated with each said latch pin and actuatable by said latch lever to extract said latch pin from said arm and against the bias of said spring.

24. (Original) The assembly of claim 23 wherein said extractor includes a cam which operably cams against said latch pin during extraction thereof.

25. (Original) The assembly of claim 24 wherein each said latch pin and respective extractor are mounted in brackets mounted to said snowplow frame, said brackets guiding movement of said latch pin and extractor.

26. (Original) The assembly of claim 25 wherein said latch pins travel transversely relative to a longitudinal axis of said assembly and said extractors travel perpendicularly relative to the travel of said pins.

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27. (Original) The assembly of claim 26 wherein each said latch pin includes a cross pin therethrough, and wherein said cross pin compresses said spring against a wall of said bracket as said cam cams against said cross pin.

28. (Original) The assembly of claim 27 wherein said cam has a cam surface which is a ramp.

29. (Original) The assembly of claim 28 wherein said latch lever is pivotally connected to said snowplow frame, said assembly further including first and second linkages connected between said latch lever and said extractors.

30. (Original) The assembly of claim 29 wherein each of said first and second linkages includes a linkage arm connected to said latch lever, and a linkage rod pivotally connected on a first end to said linkage arm and connected on a second end to said extractor.

31. (Original) The assembly of claim 30 wherein said latch lever includes a connecting rod extending transversely of said snowplow frame, said first and second linkages being connected to said connecting rod.

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32. (Original) The assembly of claim 20 wherein said first and second arms are part of said mount frame and said first and second receivers are part of said snowplow frame.

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33. (Original) The assembly of claim 20 wherein said snowplow frame comprises a lift frame and an A-frame pivotally connected to said lift frame on a rearward end of said A-frame.

34. (Original) The assembly of claim 33 further comprising a plow blade mounted on a forward end of said A-frame.

35. (Previously Presented) A method of attaching a snowplow frame to a mount frame comprising:

providing a mount frame secured to a vehicle and a snowplow frame;
one of the mount frame and the snowplow frame having first and second arms and the other of the mount frame and the snowplow frame having first and second receivers, the first and second receivers receiving the first and second arms, respectively;

one of the mount frame and the snowplow frame having first and second latch pins movable to and between latched and unlatched positions, respective ones of which removably secure the first and second arms in the first and second

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receivers, the first and second latch pins normally biased toward the latched position and a lever operably associated with the first and second latch pins to simultaneously free the latch pins to move to the latched position;

effecting relative movement between the mount frame and the snowplow frame so that the receivers receive the arms therein; and

actuating the lever to simultaneously free the latch pins to move to the latched position.

36. (Previously Presented) A method of detaching a snowplow frame from a mount frame comprising:

providing a mount frame secured to a vehicle and a snowplow frame removably attached to the mount frame;

one of the mount frame and the snowplow frame having first and second arms and the other of the mount frame and the snowplow frame having first and second receivers, the first and second receivers receiving the first and second arms, respectively;

one of the mount frame and the snowplow frame having first and second latch pins movable to and between latched and unlatched positions, respective ones of which removably secure the first and second arms in the first and second receivers, the first and second latch pins normally biased toward the latched position

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and a lever operably associated with the first and second latch pins to simultaneously free the latch pins to move to the latched position;

actuating the lever to simultaneously move the latch pins to the unlatched position; and

effecting relative movement between the mount frame and the snowplow frame so that the arms move out of the receivers.

37. (Original) A method of detaching a snowplow frame from a mount frame comprising:

providing a mount frame secured to a vehicle and a snowplow frame removably attached to the mount frame;

the snowplow frame including a jack stand movable to and between an extended ground contacting and snowplow frame supporting position and a retracted ground noncontacting and snowplow frame nonsupporting position;

one of the mount frame and the snowplow frame having a latch mechanism which removably secures the snowplow frame to the mount frame and a lever which actuates the latch mechanism to an unlatched position and which frees the jack stand for movement into the extended position;

actuating the lever to actuate the latch mechanism to the unlatched position and to free the jack stand to drop by gravity to the extended position; and

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effecting relative movement between the mount frame and the
snowplow frame to separate the mount frame from the snowplow frame.

38. (Original) The assembly of claim 13 further comprising:
a lift cylinder connected between said lift frame and said A-frame; and
structure connecting said lift frame and said plow blade, said connecting
structure including resilient and non-resilient portions;

said resilient portion creating slack in said non-resilient portion when
said plow blade is dropped to the ground and pressure is released from said lift
cylinder thereby permitting said lift frame to be rotated relative to said A-frame toward
said mount frame.

39. (Original) The assembly of claim 38 wherein said connecting
structure resilient and non-resilient portions comprise a tension spring and a chain
respectively.

40. (Original) The assembly of claim 38 wherein said connecting
structure resilient and non-resilient portions comprise a tension spring and a cable
respectively.

41. (Original) The assembly of claim 34 further comprising:

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a lift cylinder connected between said lift frame and said A-frame; and
structure connecting said lift frame and said plow blade, said connecting
structure including resilient and non-resilient portions;

said resilient portion creating slack in said non-resilient portion when
said plow blade is dropped to the ground and pressure is released from said lift
cylinder thereby permitting said lift frame to be rotated relative to said A-frame toward
said mount frame.

42. (Original) The assembly of claim 41 wherein said connecting
structure resilient and non-resilient portions comprise a tension spring and a chain
respectively.

43. (Original) The assembly of claim 41 wherein said connecting
structure resilient and non-resilient portions comprise a tension spring and a cable
respectively.

44. (Original) The assembly of claim 22 wherein said jack drops by
gravity before said latch pins unlatch.

45. (Previously Presented) The assembly of claim 1 wherein said first
and second latch pins are spring biased toward said latch position.

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46. (Previously Presented) The assembly of claim 1 or 14 wherein said latch lever is designed to have a mechanical advantage insufficient for an operator to move said latch pins to said unlatched position unless the force due to the weight of said snowplow transferred by said latch pins to said mount frame is removed by the operator.

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47. (Previously Presented) The assembly of claim 15 wherein said first jack stand lock is designed to have a mechanical advantage insufficient for an operator to actuate when said snowplow is detached from said mount frame.

48. (Previously Presented) The assembly of claim 14 wherein said jack stand is structured and arranged to permit operator pivoting of said snowplow frame relative to said mount frame to align said latch mechanism.

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49. (New) A snowplow and mount assembly comprising:
a mount frame adapted to be secured to a vehicle;
a snowplow frame including a lift frame and an A-frame pivotally connected to said lift frame on a rearward end of said lift frame;
one of said mount frame and said lift frame having first and second arms and the other of said mount frame and said lift frame having first and second

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receivers, said first and second receivers receiving said first and second arms, respectively;

first and second latch pins movable to and between latched and unlatched positions, respective ones of which removably secure said first and second arms in said first and second receivers, said first and second latch pins normally biased toward said latched position; and

a latch lever operably associated with said first and second latch pins for simultaneously freeing said latch pins to move to said latched position and moving said latch pins to said unlatched position.

50. (New) The assembly of claim 49 further comprising:

a spring biasing each said latch pin into said latched position; and

a pin extractor associated with each said latch pin and actuatable by said latch lever to extract said latch pin from said arm and against the bias of said spring.

51. (New) The assembly of claim 50 wherein said extractor includes a cam which operably cams against said latch pin during extraction thereof.

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52. (New) The assembly of claim 51 wherein each said latch pin and respective extractor are mounted in brackets mounted to said snowplow frame, said brackets guiding movement of said latch pin and extractor.

53. (New) The assembly of claim 52 wherein said latch pins travel transversely relative to a longitudinal axis of said assembly and said extractors travel perpendicularly relative to the travel of said pins.

54. (New) The assembly of claim 53 wherein each said latch pin includes a cross pin therethrough, and wherein said cross pin compresses said spring against a wall of said bracket as said cam cams against said cross pin.

55. (New) The assembly of claim 54 wherein said cam has a cam surface which is a ramp.

56. (New) The assembly of claim 55 wherein said latch lever is pivotally connected to said snowplow frame, said assembly further including first and second linkages connected between said latch lever and said extractors.

57. (New) The assembly of claim 56 wherein each of said first and second linkages includes a linkage arm connected to said latch lever, and a linkage

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rod pivotally connected on a first end to said linkage arm and connected on a second end to said extractor.

58. (New) The assembly of claim 57 wherein said latch lever includes a connecting rod extending transversely of said snowplow frame, said first and second linkages being connected to said connecting rod.

59. (New) The assembly of claim 49 wherein said first and second arms are part of said mount frame and said first and second receivers are part of said lift frame.

60. (New) The assembly of claim 49 further comprising a plow blade mounted on a forward end of said A-frame.